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## ORPHANHOOD AND THE AGE OF PARENTS

The age of the parents at the time of the birth of their children has important social and economic bearings. For, on the age of father and mother depends the probability that the parents will live to see all their children grow up to maturity and self-support, preserved from the economic and other handicaps that arise from partial or complete orphanhood.

The age at marriage and the time of birth of successive children will, of course, vary from case to case. But taking a general average for women in the United States, the first child is born when the mother is just under twenty-three years of age.* For the second child, the median age of the mother is twenty-five and a half years; for the third child, twenty-eight years, and for the fourth child, thirty years. Under current American conditions, the great majority of families do not comprise more than four children, and we shall not, therefore, continue this enumeration, especially as the diagram on page 3 will enable the reader to gauge for himself the further course of the figures for the median age.

Let us then consider first of all an average case, with the mother at the median ages specified above. Computation by actuarial method then shows that, for the first child, the probability that it will lose its mother before it reaches the age of seventeen years is 9.6 in a hundred; for the second child, the same probability is 9.9; for the third child, it is 10.3; and for the fourth, it is 10.6 in a hundred. The probability of the child losing its father is usually somewhat greater, partly because the deathrate among males is higher than among females, and partly because, in most cases, the father is a few years older than the mother. If we assume this difference in age to be two

*This, to be more exact, is the *median* age of mothers at the time their first child is born, one-half of the first children being born before the mother reaches this age, and one-half being born of older mothers. Fifty per cent. of all first children are born of mothers between the ages of twenty and twenty-six, and ninety per cent. are born of mothers between the ages of seventeen and thirty-three.

years, then the probability of a child becoming a paternal orphan before reaching its seventeenth birthday is, in an average case, for the first child, 10.4 in a hundred; for the second, 11.0; for the third, 11.7; and for the fourth, 12.4 per cent. Thus rather more than one in every ten of the fourth children becomes a maternal orphan before reaching age seventeen; and about one in every eight becomes a paternal orphan within that period. It should be noted in passing that these results are based on the last official life table for the United States, 1919-1920. As mortality conditions have improved somewhat since then, the danger of orphanhood is correspondingly a little diminished.

The figures just quoted are representative of the average case. But the very mention of averages implies departures from the average. So, for example, while the median age of the mother at the time the fourth child is born is thirty years (that is, one-half of such children are born before the mother is thirty years old), as a matter of fact, one-fourth of these children are born after the mother is thirty-four years old, and the father, say, thirty-six years. At these ages the probability that the fourth child will be left a maternal orphan is 11.7 in a hundred, and the probability that it will be left a paternal orphan is 13.8 in a hundred, that is, about one such child in seven loses its father before reaching the age of seventeen.

As a last example we may consider some of the rarer cases. Five per cent. of all sixth children are born when the mother is forty-two years old or over; and we may take it that the father is then about forty-four years old. A child born of parents at these ages is exposed to a very considerable risk of becoming an orphan. The probability of its losing its mother before reaching age seventeen is just about one in six; the probability of its becoming a paternal orphan is over one in five.

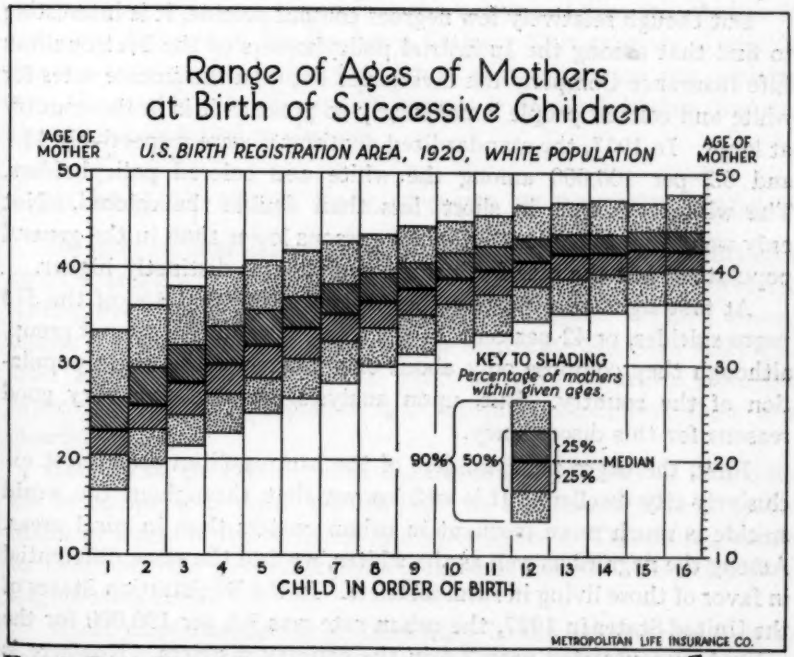
These few examples will serve by the way of illustration. If fuller details are desired by persons interested in insurance or social welfare, the table on page 3 may be consulted, which shows, for various ages of father or mother, at the birth of a child, the probability that such a child will be orphaned of that particular parent before reaching the age of seventeen years.

As the chief purpose of life insurance is the protection of wives and children against the economic hardships that arise from the premature death of the breadwinner, it is of particular interest to know something about the sequence of events, as they follow in the average case, as well as in some of the more exceptional cases by which a family is built up. For on this depends the frequency with

which children become orphaned. The facts presented in the preceding paragraphs should serve to orient us with regard to these problems.

**Chances, in One Hundred, That a Newly Born Child Will Lose Father or Mother Before Reaching Age 17**

| Age of Parent at Birth of Child | Probability of Losing Specified Parent Before Reaching Age 17 | | Age of Parent at Birth of Child | Probability of Losing Specified Parent Before Reaching Age 17 | |
|---|---|---|---|---|---|
| | Father | Mother | | Father | Mother |
| 20 | 9.0 | 9.1 | 45 | 21.9 | 19.3 |
| 25 | 10.3 | 9.8 | 50 | 29.5 | ..... |
| 30 | 11.7 | 10.6 | 55 | 40.1 | ..... |
| 35 | 13.4 | 11.8 | 60 | 52.9 | ..... |
| 40 | 16.8 | 14.6 | ..... | ..... | ..... |




**How to Read Chart.** EXAMPLE: The median age of mothers at birth of the fourth child is 29.9 years (indicated by heavy black line across fourth column); fifty per cent. of all fourth children are born of mothers between the ages of 26.8 and 33.8 (indicated by heavy diagonal shading); ninety per cent. of fourth children are born of mothers between 22.7 and 39.6 (indicated by stippled shading).

## SUICIDE AMONG NEGROES IN THE UNITED STATES

Although negroes have a homicide deathrate over eight times that of the white population, they comparatively rarely take their own lives. In 1927, the latest year for which general population statistics are available, there were only 373 suicides among negroes out of a total of 14,096 in the Registration States of the United States. This number gives a deathrate of 4.1 per 100,000 population for negroes as compared with a rate of 14.1 for the whites. In other words, almost three and one-half times as many whites as negroes in every hundred thousand commit suicide. It would appear, therefore, so far as the population figures indicate, that suicide and homicide do not go hand in hand; and that they reflect very different psychological mechanisms, even though both are acts of violence. Homicide is likely to be the outcome of sudden passion and to follow immediately the murderous impulse; suicide, on the other hand, is usually the result of brooding introspection—the very condition which makes homicide impossible.

But though relatively few negroes commit suicide, it is interesting to find that among the Industrial policyholders of the Metropolitan Life Insurance Company the divergence between the suicide rates for white and colored people is not nearly so great as it is in the country at large. In 1927, the standardized deathrates were respectively 11.1 and 6.2 per 100,000 among the white and colored policyholders. The white rate was, in short, less than double the colored. Not only was the rate for insured white persons lower than in the general population, but the rate for insured negroes was distinctly higher.

At first sight, it appears rather disconcerting that 156 of the 373 negro suicides, or 42 per cent. of the total, were in the insured group, although they compose only about one-quarter of the negro population of the country. But, upon analysis, we find two very good reasons for this discrepancy.

First, the negro policyholders of the Metropolitan are almost exclusively city dwellers. It is well known that throughout the world suicide is much more frequent in urban centers than in rural areas. Among the negroes as well as the whites, we find the same differential in favor of those living in rural districts. In the Registration States of the United States in 1927, the urban rate was 9.6 per 100,000 for the colored as contrasted with 2.4 in the country districts. Nowhere is there more conclusive evidence of the favorable factors in rural living as regards suicide than in our Southern States. For we find that suicide deathrates for Southern States, as a whole, are very low;

whereas for the white population of Southern cities they are strikingly high.

The second item which explains the higher suicide rates of negro policyholders, is that those insured in the Metropolitan reside, for the most part, in the cities of the North. In fact, over two-thirds of the insured are found in Northern cities. It is not surprising to find, therefore, that of the 156 suicides in the year, 118 or 75 per cent., took place in Northern cities. There is clearly a marked difference in status between negroes in the North and in the South. In previous reports we have pointed out the unfavorable health situation of those who have migrated from the rural areas of the South to the great industrial centers of the North. Suicide rates would likewise seem to be affected by the disorganization which accompanies such movements of population. Thus, among negro Industrial policyholders, in addition to the greater strain which urban life exerts, there is added the adverse effect on health and stability of a change from the South to the North. Our studies point to the conclusion that the mortality of the negro is better in the South and especially better in the rural districts of the Southern States. This analysis of suicide frequency only adds to the strength of that conviction and explains why the suicide rate for insured negroes is so much higher than for the negro population as a whole.

## MORTALITY FROM GALL-STONES IN RECENT YEARS

In spite of marked progress, in recent years, in the study and surgical treatment of gall-stone disease, there has been, apparently, no improvement in the mortality from this condition. In fact, among males, a slight upward tendency in the deathrate has been observed, after age 45. The data in the table on page 6, drawn from the experience of the Metropolitan Life Insurance Company, show this clearly.

Comparing the experience of ten calendar years 1911 to 1920 with the succeeding nine years, 1921 to 1929, we find no marked change for better or worse in the recorded mortality figures. This finding tends to bear out the general results published for the United States Registration Area.

While there is substantial uniformity in the figures from year to year, there are, however, important differences in the deathrates from biliary calculi from state to state and in urban and rural areas. The cities of the United States have deathrates year after year of about four or five per 100,000. In the rural regions, the deathrate is about

2.5 per 100,000. Whether this disparity in deathrates for biliary calculi is due to the heavier proportion of older people and of females in the cities, or to the radically different conditions of urban and rural life, is open to inquiry. The existence of facilities for gallbladder surgery in the cities may also have been a factor.

**Deaths per 100,000 Policyholders from Gall-stones**
**White Males and White Females**
**Metropolitan Life Insurance Company, Industrial Department,**
**1911 to 1929**

| Age Period | Deathrates per 100,000 | | | |
|---|---|---|---|---|
| | White Males | | White Females | |
| | 1921 to 1929 | 1911 to 1920 | 1921 to 1929 | 1911 to 1920 |
| 20 to 24..... | .1 | .1 | .6 | .4 |
| 25 to 34..... | .3 | .4 | 2.5 | 2.0 |
| 35 to 44..... | 1.4 | 1.4 | 6.3 | 5.2 |
| 45 to 54..... | 3.5 | 3.4 | 13.6 | 13.2 |
| 55 to 64..... | 6.3 | 6.0 | 22.3 | 22.8 |
| 65 to 74..... | 11.4 | 9.7 | 29.6 | 30.8 |

The sex-ratio of mortality from biliary calculi is of the greatest interest. It has always been recognized in a general way that the disease is of more frequent occurrence among females than males. In the table on page 7, the deathrate of females is nearly six times that of males at the age division 25 to 34 years; between 35 and 44 years, the deathrate for white females is four times that of males. The excess in the biliary calculus deathrate of females tends to reduce with advancing age, until, in the age period 65 to 74 years, the figure for females is less than three times that of males. These facts are shown in the table on the next page.

It has been ventured that pregnancy has its effect upon the incidence of gall-stones. But the statistical picture cannot be clarified until our vital statistics officially published present data on the causes of death according to marital condition. There is some evidence, however, that gall-stone incidence is high among women who have never been pregnant. Whether it is higher among married women

who have had children than among women who have been childless cannot be determined from the vital statistics available at the present time. The fact that so many mothers are observed among gall-stone patients may reflect only the high proportion of mothers in the female population. Comparison of incidence and mortality from gall-stones should be made upon the basis of the female population according to marital condition and pregnancy history. The mortality data of recent years, joined with the results of the 1930 Census, afford the opportunity for evaluating the factor of fecundity in the causation of gall-stones.

**Percentage, Deathrate Among White Females of That Among White Males. Biliary Calculi in Experience of Metropolitan Life Insurance Company, Industrial Department, 1911 to 1929**

| Age Period | Deathrates per 100,000, 1911 to 1929 | | Percentage, White Female of White Male Deathrate |
|---|---|---|---|
| | White Males | White Females | |
| 25 to 34 | .4 | 2.3 | 575 |
| 35 to 44 | 1.4 | 5.9 | 421 |
| 45 to 54 | 3.4 | 13.5 | 397 |
| 55 to 64 | 6.2 | 22.5 | 363 |
| 65 to 74 | 10.7 | 30.1 | 281 |

## AGE AT ONSET OF MENOPAUSE

The average age for cessation of menses among American white women very closely approximates forty-seven years. The exact age at which the menopause occurs varies widely. About 2 per cent. complete the change of life before the age of forty; about 20 per cent. by the age of forty-five; 65 per cent. by fifty; and 95 per cent. by age fifty-five. Child-bearing has little or no effect on the age of menopause. The influence of menopause on longevity is not marked, although it appears that, among women past forty years of age, those who have completed the change of life at the time they apply for insurance have a somewhat longer life expectancy than those who report no disturbance in the menstrual function.

These are some of the results of a recent investigation by the Metropolitan Life Insurance Company into the age at onset of

menopause. The data were taken from the medical records of women approved for regular Ordinary life insurance and it is likely that they include a fairly representative group of the female population.

These findings confirm those of other recent investigators that the average age at menopause occurs more often in the late forties than was previously thought to be the case. The statement that menopause more often occurs in the early forties, which has been repeated so often as to be generally accepted, is not true. In fact, more than one-half of the cases reporting cessation of menses at the time of the completion of the insurance medical record give ages between forty-five and fifty as the onset of menopause. Roughly, one-quarter of the cases occur before age forty-five and the remaining quarter after fifty, some cases being reported as late as at age sixty.

The question of the effect of child-bearing on the age at menopause was investigated and found to be negligible. The average age for the onset at menopause for multiparae was 46.9 years, while for the nulliparous, it was 46.6 years.

For women of a given age at time of policy issue, those reporting cessation of menses had a higher average age at death than those reporting continued menstruation. This was true not only for the total group but for the several age groups shown in the following table.

**Average Ages at Death for Women of Given Age at Policy Issue for Group Reporting Menopause and Group Reporting Continued Menstruation at That Age.**
**Metropolitan Life Insurance Company. Ordinary Department**

| Age at Issue | Average Age at Death | |
|---|---|---|
| | Women reporting continued menstruation | Women reporting menopause |
| Total | 53.9 | 60.7 |
| 42-44 | 51.0 | 56.0 |
| 45-47 | 55.3 | 59.5 |
| 48-50 | 55.4 | 56.7 |
| 51-53 | 57.2 | 64.9 |
| 54-55 | 58.7 | 63.6 |

## HEALTH RECORD FOR AUGUST, 1930

Thus far in 1930 only one month (July) has registered a higher deathrate among the industrial populations of the United States and Canada than did the corresponding month last year. The mortality rate in August was 7.5 per 1,000, as compared with 7.7 last year, and the cumulative rate for the eight elapsed months was only 8.9 per 1,000 against 9.9 in 1929—a reduction of 10 per cent. Among Metropolitan Industrial policyholders living west of the Rocky Mountains, the August deathrate was 5.9 per 1,000, as compared with 6.1 last year; in the remainder of the United States this year's figure was 7.6, as compared with 7.8; while among Canadian policyholders, the corresponding figures were 8.0 and 8.1.

Tuberculosis, diphtheria and puerperal diseases continue to be the outstandingly favorable items in what bids fair to be the best health year of all time. The tuberculosis deathrate for the eight elapsed months was more than nine per cent. below that for the like period of last year—the previous minimum. The diphtheria rate has declined twenty-eight per cent. and that for maternal diseases over eleven per cent. in a single year.

With two-thirds of 1930 already past, the cancer deathrate is 76.1 per 100,000, as compared with 77.5 for the like part of 1929. There is now a very good prospect that the almost continuous rise in the mortality from malignant growths will be broken this year. While this is an encouraging development, too much significance must not be attached to it. If, however, 1931 shows a further drop, there will be good grounds for the hope that the rise in cancer mortality is destined to be checked. Pneumonia, heart disease, Bright's disease and, more particularly, influenza, are other important diseases which have recorded much lower mortality rates than in 1929. Slight improvement is also in evidence for diabetes and diarrheal complaints.

The deathrate in the general population of the large cities of the United States during August was 10.3 per 1,000, as compared with 11.4 for the previous month and 10.6 for August, 1929. More cases of poliomyelitis and typhoid fever were reported in August than in July, but there was less diphtheria, influenza, measles, scarlet fever and smallpox. Comparison with August of last year shows increased incidence of diphtheria, influenza, scarlet fever and smallpox, with fewer cases of measles, poliomyelitis and typhoid fever.

An increase in typhoid fever is expected at this time of the year. The poliomyelitis situation, however, is causing concern in some parts of the country. Reports from forty-five states show 851 cases during

the first four weeks of August, as compared with 424 in the corresponding weeks of July. In Massachusetts, the increase was from twenty to eighty-eight cases; in Ohio, from thirteen to fifty-eight and in Kansas, from twenty-one to seventy-six. Kansas health authorities say that poliomyelitis reports for that state will be broken this year. In California, there were fewer cases in August than in July, although there was an increase in San Francisco. Pellagra is more prevalent in the State of Kentucky than in many years and there has been a considerable increase in the deathrate from this disease this year in North Carolina.

Among the noteworthy public health developments of the month, the following may be mentioned: The COMMONWEALTH FUND has chosen Massachusetts as the second state in which to develop a rural public health project under the terms of its new program for cooperation with state health departments in promoting rural health. Tennessee was the first state selected. The FLORIDA STATE BOARD OF HEALTH has planned a general health survey of the SEMINOLE INDIANS to be made this fall.

The SECOND INTER-CHAMBER HEALTH CONSERVATION CONTEST, sponsored by The CHAMBER OF COMMERCE OF THE UNITED STATES and the AMERICAN PUBLIC HEALTH ASSOCIATION, has been launched. The prospect is that about 200 cities will be enrolled. The announcement of the list of cities which won awards in the first contest received wide publicity, and undoubtedly furthered the cause of public health. Chambers of Commerce in all parts of the Country, through their health committees, are giving much thought to their health programs for next year, and are making plans for better organization and support of their local health departments. The AMERICAN PUBLIC HEALTH ASSOCIATION is continuing to provide field service, and has put three full-time health experts into survey and advisory service.

The following table shows the mortality among Industrial policyholders for August, 1930; July, 1930, and August, 1929, together with the cumulative deathrate for the first eight months of each year.

## METROPOLITAN LIFE INSURANCE COMPANY

### Deathrates* per 100,000 for Principal Causes, Premium-Paying Business in Industrial Department (Annual Basis)

MONTHS OF AUGUST, 1930; JULY, 1930, AND OF AUGUST, 1929

| CAUSES OF DEATH | RATE PER 100,000 LIVES EXPOSED* | | | | |
|---|---|---|---|---|---|
| | Aug. 1930 | July 1930 | Aug. 1929 | Cumulative, Jan.-Aug. | |
| | | | | 1930 | 1929 |
| TOTAL—ALL CAUSES | 751.3 | 843.7 | 767.7 | 892.1 | 987.5 |
| Typhoid fever | 3.2 | 2.6 | 3.3 | 1.7 | 2.1 |
| Measles | .6 | 2.3 | 1.6 | 3.8 | 4.0 |
| Scarlet fever | 1.1 | 1.8 | 1.1 | 2.9 | 3.0 |
| Whooping cough | 5.4 | 4.9 | 6.4 | 4.7 | 6.4 |
| Diphtheria | 3.0 | 4.3 | 4.0 | 6.2 | 8.6 |
| Influenza | 3.3 | 4.2 | 3.9 | 16.7 | 55.8 |
| Tuberculosis (All forms) | 71.6 | 85.0 | 78.6 | 83.7 | 92.1 |
| Tuberculosis of resp'y system | 62.3 | 74.4 | 70.1 | 72.7 | 81.6 |
| Cancer | 73.6 | 79.3 | 72.6 | 76.1 | 77.5 |
| Diabetes mellitus | 16.1 | 16.7 | 14.4 | 18.8 | 19.5 |
| Cerebral hemorrhage | 53.7 | 60.2 | 46.4† | 60.8 | 59.3† |
| Organic diseases of heart | 112.7 | 133.7 | 117.0 | 148.0 | 154.7 |
| Pneumonia (All forms) | 29.4 | 39.2 | 34.4 | 84.4 | 103.5 |
| Other respiratory diseases | 8.3 | 10.2 | 9.2 | 11.7 | 13.1 |
| Diarrhea and enteritis | 32.2 | 22.9 | 31.5 | 16.3 | 17.4 |
| Bright's disease (Chronic nephritis) | 58.6 | 66.9 | 59.9 | 69.0 | 72.0 |
| Puerperal state | 10.8 | 11.4 | 11.7 | 12.5 | 14.1 |
| Suicides | 9.3 | 9.3 | 7.1 | 9.5 | 8.6 |
| Homicides | 6.3 | 7.8 | 6.6 | 6.4 | 6.4 |
| Other external causes (excluding suicides and homicides) | 75.6 | 80.1 | 71.6 | 62.5 | 64.0 |
| Traumatism by automobiles | 22.4 | 22.2 | 22.5 | 19.2 | 18.6 |
| All other causes | 176.7 | 200.9 | 186.6 | 196.1 | 205.4 |

*All figures in this table include insured infants under one year of age. The rates for 1930 are subject to slight correction, as they are based on provisional estimates of lives exposed to risk.

†Rate not comparable with that for 1930.

Correspondence on the subjects discussed in these BULLETINS may be addressed to: The Editor,

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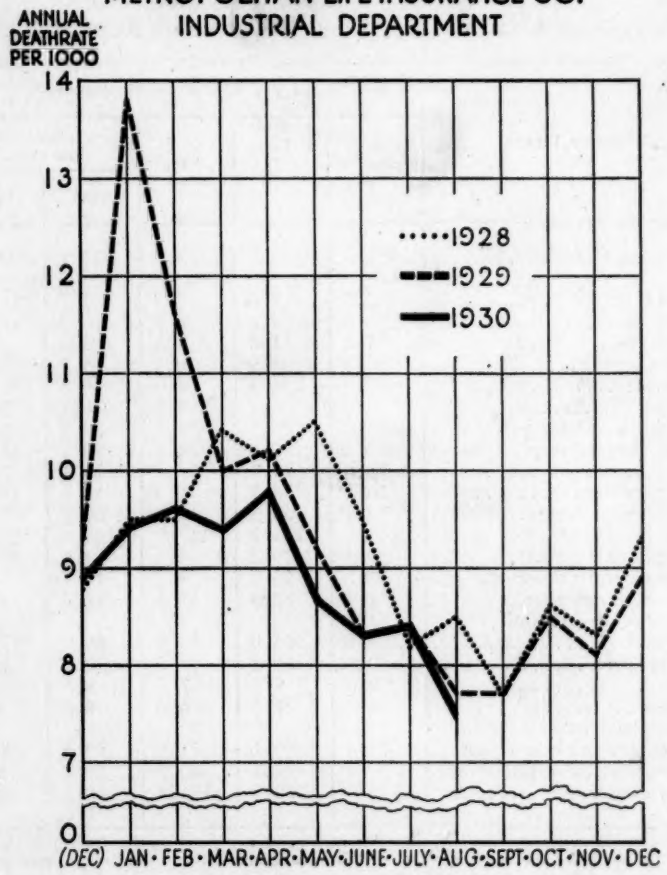
# DEATHRATES
## FROM ALL CAUSES

METROPOLITAN LIFE INSURANCE CO.
INDUSTRIAL DEPARTMENT




| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1928* | 9.5 | 9.5 | 10.4 | 10.1 | 10.5 | 9.5 | 8.2 | 8.5 | 7.7 | 8.6 | 8.3 | 9.3 |
| 1929* | 13.8 | 11.6 | 10.0 | 10.2 | 9.2 | 8.3 | 8.4 | 7.7 | 7.7 | 8.5 | 8.1 | 8.9 |
| 1930 | 9.4 | 9.6 | 9.4 | 9.8 | 8.7 | 8.3 | 8.4 | 7.5 | | | | |

* Rates for 1928 and 1929 are final.

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